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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/169,060	10/09/1998	WOLFGANG MUELLER	10191/822	5201

26646 7590 08/28/2002

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EXAMINER

MEDLEY, PETER M

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 08/28/2002

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 25

Application Number: 09/169,060
Filing Date: October 09, 1998
Appellant(s): MUELLER ET AL.

Richard L. Mayer
For Appellant

EXAMINER'S ANSWER

MAILED
AUG 28 2002

GROUP 2800

This is in response to the appeal brief filed 11 April 2002.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

No amendment after final has been filed.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1-6, 8-10, 13-18, 20-22, 30, 31, and 33; 29; and 32 and 34-37 do not stand or fall together but fails to provide reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *ClaimsAppealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

4,825,139

Hamelin et al

4-1989

5,793,625

Balogh

8-1998

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The rejection of claims 32 and 34-37 is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Hamelin et al.

Hamelin discloses a rectifier and a plurality of transistors in **fig. 1**. The reference discloses in the discussion of **fig. 2** in the last paragraph of column 8 that the transistors act as a step-up converter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-10, 13-18, 20-22, 30, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamelin et al in view of Balogh.

Hamelin et al discloses a device and method for controlling a generator comprising a diode bridge and transistor T in **fig. 11**. The reference also teaches that

the signal to the transistor can be varied in lines 25-40 of column 7. The reference also discloses a diode D7. Hamelin discloses a rectifier and a plurality of transistors in fig. 1. The reference discloses in the discussion of fig. 2 in the last paragraph of column 8 that the transistors act as a step-up converter.

The reference does not disclose a smoothing capacitor or insulated gate bipolar transistor.

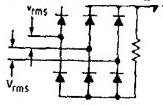
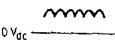
Balogh discloses that a "decoupling" capacitor C is used at the voltage detection point. One of ordinary skill in the art would recognize this as a smoothing capacitor. Balogh discloses using a "decoupling" capacitor for the purpose of supporting the load when the generator is short circuited. See abstract. It would have been obvious to one of ordinary skill in the art to use a "decoupling" capacitor for the purpose of supporting the load when the generator is short circuited.

The court has found that the selection of a known material based on its suitability for its intended use is obvious. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). It would have been obvious to one of ordinary skill in the art to use insulated gate bipolar transistors for the purpose of utilizing their known electrical properties.

(11) Response to Argument

The use of alternators in cars is a well established art, every since the first car battery eliminated the need for manual starting of cars. As the number of accessories in cars increases, so does the electrical load that they demand. Alternators take the mechanical energy from the motor and convert it to electrical energy. They do this by

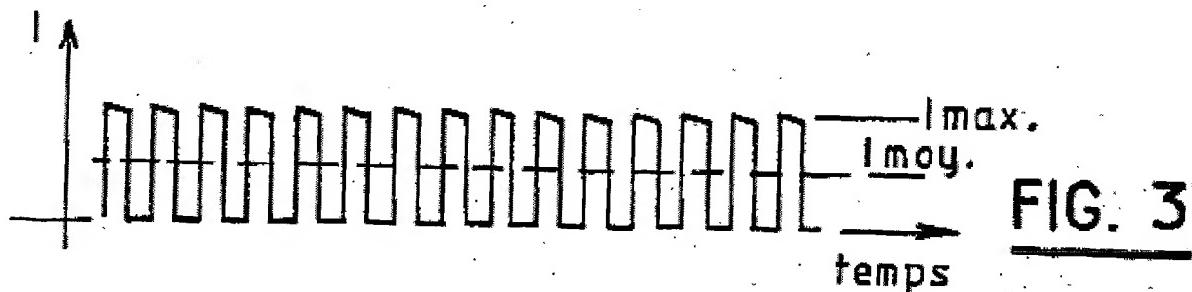
rotating a magnetic field from a permanent magnet or an electro-magnet through inductors. See L1-L3 in fig. 1 of the present invention (R1-R3 represent the small resistance of the inductors and U1-U3 represent the sinusoidal voltage generated in the inductors). Because the rotation causes the magnetic flux through the inductors to change, a sinusoidal voltage is created in the inductors whose magnitude is proportional to the rotational speed of the magnetic field and whose frequency is the same as the rotational frequency of the alternator. Because the accessories all need a DC voltage, the sinusoidal voltage is rectified by six diodes. See DB on the left side of fig. 1 of the current invention. The idealized DC output looks like:

CONFIGURATION	CIRCUIT	V_{in}	$V_{o(peak)}$	$V_{o\ dc}$	PEAK INVERSE VOLTAGE PER DIODE	RMS RIPPLE VOLTAGE	FUNDAMENTAL OUTPUT RIPPLE FREQUENCY*	OUTPUT WAVEFORM
	THREE-PHASE BRIDGE V_{rms} LINE TO LINE	V_{rms}	$1.41 V_{rms}$	$1.35 V_{rms}$	$2.45 V_{rms}$	$0.057 V_{rms}$	$6 f_L$	$0 V_{dc}$ 

* f_L = LINE FREQUENCY

Taken from Switching and Linear Power Supply, Power Converter Design, by A. I.

Pressman. Even this idealized DC output has a significant amount of ripple. In real life, the output has even more ripple from electromagnetic noise created in the engine compartment and harmonics in the alternator (the electrical noise created in the alternator because of the interactions of the inductors). Because of the different conditions while driving a car, especially when idling, it is sometimes necessary to further condition the voltage by stepping-up or boosting the voltage. Because of the conservation of energy, this involves the rearrangement of the voltage wave. The output of which typically looks like fig. 3 of Hamelin et al



The voltage has been step-uped or boosted, but the output is not truly DC because of the spaces between the peaks (the figure actually shows the current, but the basic shape is the same for the voltage). The output can be treated as DC because of the wide tolerances of most automobile accessories.

A. Rejection of Claims 32 and 34-37

The rejection of these claims is withdrawn.

B. Rejection of Claim 29

First, it should be noted that Applicant is not asserting any structural differences between the present invention and the Hamelin et al reference. He only asserts a functional difference without ever pointing to any specific structural differences between the present invention and the Hamelin et al reference. It is well established that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). “[A]pparatus claims cover what a device is, not what a device does.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). It is the Examiner’s position that since there are no structural differences between the two devices that the rejection is proper.

Next, it is the Examiner's position that the functions of the two devices are the same. Applicant only asserts that "chopping" is never equated to a step-up converter function in Hamelin et al. It is well established that in a 102 rejection is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Applicant never actually states what "chopping" is, only that he does not think it's step-up converting. The phrases "chopping" and "clipping" that are found in Hamelin et al are well known terms of art dealing with waveform shaping. In fig. 3 of Hamelin et al above "chopping" refers to the width spacing between the peaks. See "chopper" in Dictionary of Electronics, edited by R. F. Graf. The term "clipping" refers to the manipulation of the height of the peaks. See "clipper" in Dictionary of Electronics, edited by R. F. Graf. Applicant also notes that Hamelin et al discloses that it is desirable to have less than maximum current, but Applicant fails to recognize that a step-up function can be achieved without maximizing the current.

Third, Applicant again does not find identity of terminology in the definition of boost converter in the Comprehensive Dictionary of Electrical Engineering. Anyone of skill in alternator arts would have known that PWM is pulse-width modulation. Pulse modulation involves both "clipping" and "chopping". See "pulse-width modulation" and the figure on page 455 in Dictionary of Electronics, edited by R. F. Graf.

C. Rejection of Claims 1-6, 8-10, 13-18, 20-22, 30, 31, and 33

First, Applicant argues that the capacitor **C** of Balogh has a different function than the capacitor **C** of the present invention. Nowhere does he argue any structural differences between the present invention and the obvious improvement on Hamilen et

al's invention in view of Balogh. It is well established that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

"[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525,1528 (Fed. Cir. 1990). It is the Examiner's position that since there are no structural differences between the present invention and the obvious improvement on Hamilen et al's invention in view of Balogh that the rejection is proper.

Second, it is the Examiner's position that the "decoupling" capacitor of Balogh functions as a "smoothing" capacitor. Applicant points to column 8 of Balogh in support of his position that the capacitors do not function the same, but Applicant fails to recognize that the further elimination of ripple by Balogh is caused during boosting because the change of the power factor when boosting and has nothing to do with the capacitor (power factor is determined by the phase relationship between the current and voltage where it is zero if they are 90° of phase and 1 if they are exactly in phase) and that smoothing can still result in significant amount of ripple. It should be noted that the "decoupling" capacitor is included in **fig. 1A** labeled prior art. It is the Examiner's position that it is a scientific truth that a capacitor placed in parallel with a rectifier bridge acts as a smoothing capacitor. Applicant has been provided with the Satoh et al reference which clearly describe as parallel connected capacitor as smoothing in line 27 of column 4. The use of smoothing capacitors is further described in Basic DC Power Supply Design by Andy Collinson. (Note: This reference was obtained from searching

for www.google.com for "smoothing capacitor" and is supplied under MPEP 2124 which does not require a reference to have a prior date to the reference if it is used to supply a scientific truth. It is the Examiner's position that the rejection is fully supported by Hamelin et al and Balogh, and he has only provided Satoh et al and Collinson to help in the understanding the full breadth of Hamelin et al and Balogh).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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July 26, 2002

Conferees
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